Temperature

The degree of hotness or coldness of a body or environment; A measure of the average energy possessed by the molecules of a body.

Handheld:

1. Temp 360
2. Temp 300
3. Temp 10 Series
4. EcoScan Temp JKT
5. EcoScan Temp 6
6. EcoScan Temp 5

"Our pharmaceutical technicians look to Eutech's meters for important answers."

About Temperature Measurement

Introduction to Thermometry

Thermometry is the measurement of temperature or temperature changes. Temperature measurements are necessary in various industries ranging from agriculture, HVAC, chemical and manufacturing, food and beverage, boiler and cooling towers, schools and laboratories to water and wastewater treatment. There are various types of thermometers that rely on different principles of measurement.

Eutech offers the user-friendly and feature-packed EcoScan temperature meters Temp 5, Temp 6 and Temp JKT for routine indoor and outdoor temperature measurements. The EcoScan Temp 5 and Temp 6 are paired with the 100K thermistor temperature probe and 3-wire RTD Pt 100 temperature probe respectively.

What is a Thermocouple?

Thermocouple probes are composed of two dissimilar metals, joined to produce a voltage at a given temperature. Thermocouple thermometers measure, amplify, linearise and display the proportional voltage signal generated by the thermocouple probe. Thermocouples are used in most general purpose applications where precision is not a top priority. They offer a wide temperature range and come in a variety of metal combinations or calibrations.

The J, K and T are three of the most common calibrations available. Although the maximum temperature differs with the diameter of the wire used in the thermocouple, each calibration consists of a different temperature range and environment.

Type J and K Probes:
±1 to 4 °C or ±0.4 % probes of reading above 0 °C, whichever is greater

Type T Probes:
±0.5 to 2 °C or 0.4 % of reading above 0 °C, whichever is greater

Thermocouple Selection

Some of the following criteria determine the selection of a suitable thermocouple:
- Temperature range
- Chemical resistance of the thermocouple or sheath material
- Abrasion and vibration resistance
- Installation requirements (may need to be compatible with existing equipment; existing holes may determine probe diameter)

The EcoScan Temp JKT is designed for measurement with the Type J, Type K and Type T thermocouples. The meter is capable of measuring a wide range of temperatures and is rugged, dust-proof and splash-proof to IP54 standards, making it suitable for most industrial applications.

Thermocouple Probe Junction Types

Sheaths with small diameters have faster response times. Sheaths with larger diameters have longer life and are better for measuring higher temperatures.

Probe Sheath Materials

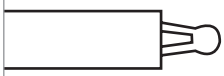
INCONEL® 600 Sheath is ideal for severely corrosive environments and at elevated temperatures. It resists progressive oxidation. Maximum operating temperatures are: continuous – 1149 °C, intermittent –1371 °C.

304 SS Sheath is for general purpose use. It is corrosion-resistant, and is good for food service and biological applications. Maximum operating temperatures: continuous – 899 °C, intermittent – 1399 °C.

316 SS Sheath has higher corrosion resistance than 304 SS. It withstands some strong acids. Maximum operating temperatures: continuous – 899 °C, intermittent – 1371 °C.

SS Sheath with Coating of HDPE with grounded junction is ideal with corrosive liquids and atmospheres. It has a longer response time and can measure temperatures to 260 °C.

Eutech offers various probes with ungrounded junction and 304 SS sheath. Models include the Type J and Type K probes available for general purpose immersions in liquids or penetration in meats, plastic and other semi-soft materials.

	**Exposed Junction** has the fastest response time making it ideal for measuring rapid temperature changes. Clear coating on most models provides a humidity barrier for the thermocouple. However, it is not recommended for use with corrosive fluids or atmospheres.
	Ungrounded Junction has a welded junction insulated from the protective sheath and is electrically isolated. Longer response time is expected. Recommended use for conductive solutions or where isolation of the measuring circuitry is required.
	Grounded Junction has a junction welded to tip of sheath. Wires are completely sealed from contaminants. Good response time.

What is a Thermistor?

Thermistors are thermally sensitive resistors which change electrical resistance due to temperature changes. They have predictable characteristics and offer long term stability. Although response times are generally faster than other types of probes, thermistors have a limited temperature range that usually cannot exceed 150 °C.

The Eutech EcoScan Temp 5 has a measurement range of 40.0 to 125.0 °C using the 100K thermistor temperature probe.

What is RTD?

RTD or Resistance Temperature Detector refers to the measurement of temperature by measuring the change in electrical resistance across metal wires. This resistance value is interpreted by an RTD thermometer. Although the RTD wire can be made of any metal, platinum is preferred for its excellent repeatability, stability and resistance to corrosion and chemicals. RTDs are more accurate and stable compared to other probes such as thermocouples. However they are not recommended for extreme temperatures. An RTD probe is chosen where accuracy and repeatability are important.

The Eutech EcoScan Temp 6 is a RTD temperature meter which can be used with the 3-wire RTD Pt 100 temperature probe for accurate and reliable measurements.

Temp 360

Precision RTD Datalogging Thermometer

The Temp 360 Precision RTD Datalogging Thermometer is your choice for fast, reliable and highly-precised measurements across a wide temperature range. Rugged and easy to use, the Temp 360 datalogger features a large backlit dual-line LCD, giving you clear, accurate readings, even in dark environments.

USB output for advanced data handling with your computer

Protective rubber armor doubles up as a table-top stand

Hang the meter from a pipe or belt

Protective rubber armor ensures a firm grip

- Log up to 2000 data points automatically at intervals from one second to 60 minutes, or manually at the touch of a button
- Easy calibration – choose one-point or two-point
- Minimum, maximum and differential temperature view at the press of a button
- Large, easy-to-read illuminated display
- Exclusive three-way hands-free option* – hang the meter from a pipe or belt, stick the meter to a metallic surface, or simply stand the meter on a table surface
- USB output for advanced data handling with your computer
- IP54 splashproof with sealed keypad and ABS plastic housing
- Protective rubber armor ensures a firm grip and doubles up as a table-top stand

** Sold separately*

Applications

• General manufacturing • F&B manufacturing • Instruments manufacturing • Electrical equipment • Chemical industries • Aquaculture • HVAC • Construction • Education • Cosmetics • Pharmaceuticals • Environmental • Plastics & rubber • Forest products • Printing • Glass & cement • Research • Greenhouse • Textiles • Healthcare • Transportation • Utilities • Water filtration

Temp 300

Dual-Input Thermocouple Datalogging Thermometer

Differential temperature measurement is a breeze with the Temp 300 Dual-Input Thermocouple Datalogging Thermometer. With a user-friendly interface, this dual-input thermocouple handheld allows users to navigate through setup and operation easily, even without a manual. Ergonomically designed, the Temp 300 fits your palm perfectly and comes with a large backlit LCD for working in dark environments.

USB output for advanced data handling with your computer

Protective rubber armor doubles up as a table-top stand

Hang the meter from a pipe or belt

Protective rubber armor ensures a firm grip

- Accepts J, K, T, E, R, S, N and B thermocouple probes
- Multi-line display shows individual and differential temperatures simultaneously
- Log up to 2000 data points automatically at intervals from one second to 60 minutes, or manually at the touch of a button
- Easy calibration – choose one-point or two-point, calibrate channels separately or match one probe to the other
- Large, easy-to-read illuminated display
- Exclusive three-way hands-free option* – hang the meter from a pipe or belt, stick the meter to a metallic surface, or simply stand the meter on a table surface
- USB output for advanced data handling with your computer
- IP54 splashproof with sealed keypad and ABS plastic housing
- Protective rubber armor ensures a firm grip and doubles up as a table-top stand

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Temp 10 Series

Single-Input Thermocouple Thermometers

Rugged and easy to use, the Single-Input Thermometers each comes with a large, backlit dual-line LCD, giving you clear, accurate readings of measured and min/max temperature, even in dark environments.

The Temp 10 single RTD thermometer series consist of three models – J, K or T – for your basic temperature measurement needs.

The Temp 16 RTD Thermometer gives you fast, reliable and highly precise measurements across a wide temperature range.

Magnets hold the meter to any metallic surface

Protective rubber armor doubles up as a table-top stand

Hang the meter from a pipe or belt

Protective rubber armor ensures a firm grip

- Temp 10 Series measures from -250 to 1372 °C; Temp 16 features high precision measurements from -200.0 to 850.0 °C (-392.0 to 1562 ºF)
- Automatic calibration – just leave electrode in ice water and press 'CAL' to calibrate
- Min/max temperature at the press of a key – dual-display shows current and min/max readings
- Large, easy-to-read illuminated display
- Accepts a wide variety of temperature probes using standard mini-connector
- Exclusive three-way hands-free option* – hang the meter from a pipe or belt, stick the meter to a metallic surface, or simply stand the meter on a table surface
- IP54 splashproof with sealed keypad and ABS plastic housing
- Protective rubber armor ensures a firm grip and doubles up as a table-top stand

** Sold separately*

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Models	Temperature Thermometers					
	Temp 360	Temp 300	Temp 16	Temp 10J	Temp 10K	Temp 10T
Temperature Handheld Meters Specifications						
Measuring Parameter	°C / °F					
Highlights	Precision RTD Datalogger	Type J, K, T, E, N, R, S & B Dual Input Thermocouple	Single Input Precision RTD	Type J Single Input Thermocouple	Type K Single Input Thermocouple	Type T Single Input Thermocouple
Range	-201 to 1210 °C / -330 to 2210 °F	Type J: -210 to 1200 °C / -346 to 2192 °F Type K: -250 to 1372 °C / -418 to 2501 °F Type T: -250 to 400 °C / -418 to 752 °F Type E: -250 to 1000 °C / -418 to 1832 °F Type R: 0 to 1768 °C / 32 to 3214 °F Type S: 0 to 1768 °C / 32 to 3214 °F Type N: -250 to 1300 °C / -418 to 2372 °F Type B: 200 to 1800 °C / 392 to 3272 °F	-200.0 to 850.0 °C / -392 to 1562 °F	-210 to 1200 °C / -346 to 2192 °F	-250 to 1372 °C / 418 to 2501 °F	-250 to 400 °C / -418 to 752 °F
Resolution	From -330.0 to -100 °C/°F: 0.1 °C/°F From -99.99 to 99.99 °C/°F: 0.01 °C/°F From 100.0 to 999.9 °C/°F: 0.1 °C/°F Above 1000 °C/°F: 1 °C/°F	Auto-ranging: 0.1/1 °C/°F -199.9 to 999.9 °C/°F: 0.1 °C/°F 1 °C/°F outside this range	-200.0 to 850.0 ; 0.1 °C -392.0 to 999.9 ; 0.1 °F 1000 to 1562 ; 1 °F	Below 1000 ° ; 0.1 °C/°F Above 1000 ° ; 1 °C/°F		
Accuracy	From -330.0 to -100 °C/°F: ±0.1 °C / ±0.2 °F From -99.99 to 99.99 °C/°F : ±0.03 °C / ±0.06 °F From 100.0 to 999.9 °C/°F : ±0.1 °C / ±0.2 °F Above 1000 °C/°F : ±1 °C / ±2 °F	For J, K, T, E & N Below -150 °C / -238 °F : ±0.1 % of reading ±0.4 °C / ±1 % ±0.7 °F Above -150 °C / -238 °F : ±0.25 % of reading ±1 °C / ±0.25 % ±0.7 °F For R, S & B ±0.1 % of reading ±1 °C / ±0.1 % ±2 °F	-200.0 °C to -100.0 °C / -392 °F to -148 °F : ±2.0 °C / ±4.0 °F -99.9 °C to 199.9 °C / -148 °F to 392 °F : ±0.2 °C / ±0.4 °F 200.0 °C to 850.0 °C/ 392 °F to 1562 °F : ±2.0 °C / ±4.0 °F	Below -150 ° ; ±0.25 % of reading ±1 °C Above -150 ° ; ±1 % of reading ±0.4 °C		
Datalogging	2000 points		–			
Logging Interval	1 sec to 60 mins		–			
Output	USB		–			
Min/Max Reading	Yes					
Stability Indicator	Yes					
Storage	-40 to 65 °C / -40 to 149 °F ; 10 to 90 % (non-condensing)					
Ingress Protection (With Probe Attached)	IEC-529 IP-54 for dust and water-resistant enclosures					
Compliance (For CE Mark)	EN61326-1/A1: 1998 (EU EMC directive)					
Hold Function	Yes					
Auto-Off	17.5 min (selectable)					
LCD Display	58 x 40 mm with backlight					
Input	Single (3-pin DIN connector)	Double (ANSI connectors)	Single (3-pin circular connector (switchcraft TA3F))	Single (ANSI connector)		
Power	3 x 1.5 V 'AA' alkaline batteries (included) or use optional 100 / 240 VAC power adapter (60X030134)					
Battery Life	> 750 hrs (without backlight)					
Dimensions (LxWxH); Weight — Meter	17.5 x 9.7 x 4.2 cm ; 267 g (without armor) ; 18 x 10.2 x 5.2 cm ; 362 g (with armor)					
Dimensions (LxWxH); Weight — Boxed	26 x 13.5 x 7.5 cm ; 580 g					

EcoScan Temp JKT ; EcoScan Temp 6 ; EcoScan Temp 5

°C/°F °C/°F °C/°F

Ideal for routine indoor and outdoor temperature testing, the EcoScan Temp JKT, Temp 6 and Temp 5 are durable, value-for-money thermometers with user-friendly features.

- Selectable °C/°F readout
- Non-volatile memory backup
- Factory calibrated
- Offset adjustment
- Self-diagnostic messages
- Easy push-button calibration
- HOLD and selectable auto power-off function
- EcoScan Temp 5 uses 100K thermistor probes
- EcoScan Temp 6 uses 3-wire RTD PT100 probes
- EcoScan Temp JKT features versatility with interchangeable J, K, T probes

Applications

General: *Ideal for applications that require the measurement and monitor of temperature of liquid, solid, semi-solid or gel.*

Industrial: *Can be used in photo developing, chemical and plating industries and all applications that require temperature measurement. Can be used as a practical substitute for glass thermometers in food processing or agriculture applications. The min/max feature is useful for HVAC applications where the measurement and monitor of heating and cooling efficiency is required. Other applications include flue gas temperatures, boiler water, heater jacket temperatures, inlet and outlet water heater temperatures, etc.*

Educational: *Ideal for students with its user-friendly, easy push-button features. No worries about broken glass or mercury spillage.*

Models	EcoScan Single-Display		
	Temp JKT	Temp 6	Temp 5
Temperature Handheld Meters Specifications			
Measuring Parameter	°C / °F		
Highlights	Type J Thermocouple; Type K Thermocouple; Type T Thermocouple	3 wire RTD pt100 temperature probe	100K thermistor temperature probe
Range	-200 to 1000 °C / -328 to 1832 °F; -250 to 1372 °C / -418 to 2502 °F; -250 to 400 °C / -4.8 to 752 °F	-200.0 to 850.0 °C / 328.0 to 1562 °F	-40.0 to 125.0 °C / -40.0 to 257 °F
Resolution	1 °C / 1 °F (t < -99.0 °C); 0.1 °C / 0.1 °F (-99.9 °C < t < 299.9 °C); 1 °C / 1 °F (t > 299.9 °C)	0.1 °C / 0.1 °F (-99.9 to 199.9 °C) ; 1 °C / 1 °F (range < -99.9 °C and range > 199.9 °C)	0.1 °C / 0.1 °F
Accuracy	±0.25 % of reading + 1 °C (t < -99.9 °C); ±0.2 % of reading + 0.5 °C (t > -99.9 °C)	±0.2 °C / ±0.4 °F (-99.9 to 199.9 °C); ±2 °C (range <-99.9 °C and range >199.9 C)	±0.2 °C / 0.4 °F
Offset Adjustment	±10 °C / ±18 °F	±5 °C / ±0.9 °F	
Hold Function	Yes		
Auto-Off (Selectable)	Yes		
Low Battery Indicator	Yes		
LCD Display	Single custom LCD		
Operating Temperature	-10 to 50 °C / 14 to 122 °F	0 to 50 °C / 32 to 122 °F	
Input	2-pin ANSI mini connector	3-pin panel mount connector	¼ inch phono plug
Power	4 x 1.5 V 'AAA' alkaline batteries		
Battery Life	> 200 hrs		
Dimensions (LxWxH); Weight — Meter	14 x 7 x 3.5 cm ; 200 g		
Dimensions (LxWxH); Weight — Boxed	24 x 16.5 x 8.5 cm ; 510 g		

Temperature Handheld Meters

Item	Order Code	Part No.	Type			Temperature Probes			
			Thermocouple Type(s)	RTD	Thermistor	Thermocouple Type J, K,T	Temperature Probe (TEM6TEM01R)	Temperature Probe (TEM5TEM01P)	RTD Probes
Temp 10J	TSTEMP10J	01X450405	J			•			
Temp 10K	TSTEMP10K	01X450408	K			•			
Temp 10T	TSTEMP10T	01X450411	T			•			
Temp 16	TSTEMP16-RTD	01X491704		•					•
Temp 300	TSTEMP300	01X523604	J, K, T, E, R, S, N, B			•			
Temp 360	TSTEMP360	01X526504		•					•
Temp JKT	ECTEMPJKT	01X270401	J, K, T			•			
Temp 6	ECTEMP601	01X256503		•			•		
Temp 5	ECTEMP501	01X256502			•			•	

Accessories

Used With	Description	Order Code	Part No.
Type J	General purpose probe (for immersion into liquids), 1 m cable, ungrounded, -50 to 700 °C	ECTPGLPJ01M	01X220001
Type J	Penetration probe (for penetrating meat, plastic and semi-soft materials), 1 m cable, ungrounded, -50 to 700 °C	ECTPPENJ01M	01X220002
Type K	General purpose probe (for immersion into liquids), 1 m cable, ungrounded, -50 to 700 °C	ECTPGLPK01M	01X220101
Type K	Penetration probe (for penetrating meat, plastic and semi-soft materials), 1 m cable, ungrounded, -50 to 700 °C	ECTPPENK01M	01X220102
Type K	Surface probe (for direct contact on hot surfaces), 1 m cable, ungrounded, -50 to 700 °C	ECTPSURK01M	01X220103
RTD	3 wire RTD Pt100 temperature probe, ungrounded, SS304 (max. temperature 150 °C)	TEM6TEM01R	01X021814
RTD	RTD Pt100 temperature probe, round-tip sensor, -50 to +400 °C	ECPT56L	93X375701
Thermistor	100K thermistor temperature probe, ungrounded, SS304, 0 to 125 °C	TEM5TEM01P	01X021811
Temp 300, 360	100 / 240 VAC power adapter, 9 V, 6 W, centre -ve with universal interchangeable pin	60X030134	60X030134
Temp 10JKT, 16, 300, 360	Hands-free kit for temperature thermometers (2 magnets and a strap)	HNDSFRKIT	01X460701
Temp 10JKT, 16, 300, 360	Rubber armor/stand for temperature thermometers	01X460601	01X460601

** More temperature probes available. Check with your distributor today!*